CLAIMS

What is claimed is:

5   1. In an electronic device, a method of altering a graphical model, comprising:

indent   identifying a component of the graphical model for conversion; and

indent   processing the component to identify one of similarities with other components and similarities with selected characteristics, and automatically converting the component into a reference.

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2. The method of claim 1, wherein the component comprises at least one of a system, a sub-system, a portion of a system, and a portion of a sub-system disposed within the graphical model.

15   3. The method of claim 1, wherein the graphical model comprises a plurality of components.

4. The method of claim 1, wherein identifying the component comprises heuristically locating a re-usable pattern and selecting the component to represent the re-usable

20   pattern.

5. The method of claim 1, wherein identifying the component comprises utilizing a checksum to identify a selected pattern and selecting the component that matches the selected pattern.

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6. The method of claim 1, wherein identifying the component comprises heuristically locating a specific type of component and selecting the component that matches the specific type.

30   7. The method of claim 1, wherein identifying the component comprises locating a selected acyclic graph of blocks and selecting the component that contains the selected acyclic graph of blocks.

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8. The method of claim 1, wherein identifying the component comprises utilizing a partitioning specific checksum to select a predetermined combination of selected patterns and selected re-usable features of the component for identification.

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9. The method of claim 1, wherein identifying the component comprises soliciting user interaction to participate in a selection of the component based on at least one of pattern matching, re-usability, and polymorphism characteristics.

10 10. The method of claim 1, wherein automatically converting the component into a reference comprises creating a new model and copying the component into the new model.

11. The method of claim 10, further comprising setting compiled properties to be fixed
15 into input and output ports.

12. The method of claim 10, wherein automatically converting the component into a reference further comprises copying a configuration set from the component into the new model.

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13. The method of claim 12, wherein the configuration set comprises model peripheral information.

14. The method of claim 10, further comprising replacing the other components with
25 references to the new model.

15. The method of claim 1, wherein automatically converting the component into a reference comprises collapsing the component into a subsystem within the graphical model.

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16. The method of claim 15, wherein automatically converting the component into a reference further comprises copying the subsystem into a library, forming a library subsystem and leaving an original version of the subsystem within the graphical model.

5   17. The method of claim 16, wherein automatically converting the component into a reference further comprises replacing the original version of the subsystem with a reference to the library subsystem.

18. The method of claim 17, further comprising replacing the other components with
10   references to the library subsystem.

19. The method of claim 1, wherein the reference comprises at least one of a library reference and a model reference.

15   20. A system for altering a graphical model, the system comprising:

an identifier for identifying a component of the graphical model for conversion; and

a converter for processing the component to identify one of similarities with other components and similarities with selected characteristics, and automatically
20   converting the component into a reference.

21. The system of claim 20, wherein the component comprises at least one of a system, a sub-system, a portion of a system, and a portion of a sub-system disposed within the graphical model.
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22. The system of claim 20, wherein the graphical model comprises a plurality of components.

23. The system of claim 20, wherein identifying the component comprises heuristically
30   locating a re-usable pattern and selecting the component to represent the re-usable pattern.

24. The system of claim 20, wherein the identifier utilizes a checksum to identify selected patterns and selecting the component that matches the selected patterns.

25. The system of claim 20, wherein the identifier heuristically locates a specific type of component and selects the component that matches the specific type.

26. The system of claim 20, wherein the identifier locates a selected acyclic graph of blocks and selects the component that contains the selected acyclic graph of blocks.

27. The system of claim 20, wherein the identifier utilizes a partitioning specific checksum to select a predetermined combination of selected patterns and selected re-usable features of components for identification.

28. The system of claim 20, wherein the identifier solicits user interaction to participate in a selection of components based on at least one of pattern matching, re-usability, and polymorphism characteristics.

29. The system of claim 20, wherein the converter creates a new model and copies the component into the new model.

30. The system of claim 29, the converter sets compiled properties to be fixed into input and output ports.

31. The system of claim 29, the converter copies a configuration set from the component into the new model.

32. The system of claim 31, wherein the configuration set comprises model peripheral information.

33. The system of claim 29, wherein the converter replaces the other components with references to the new model.

34. The system of claim 20, wherein the converter collapses the component into a subsystem within the graphical model.

35. The system of claim 34, wherein the converter copies the subsystem into a library, forming a library subsystem and leaving an original version of the subsystem within the graphical model.

36. The system of claim 35, wherein the converter replaces the original version of the subsystem with a reference to the library subsystem.

37. The system of claim 36, wherein the converter replaces the other components with references to the library subsystem.

38. The system of claim 20, wherein the reference comprises at least one of a library reference and a model reference.

39. A medium holding computer executable steps for carrying out a method of altering a graphical model, the method comprising:

identifying a component of the graphical model for conversion; and

processing the component to identify one of similarities with other components and similarities with selected characteristics, and automatically converting the component into a reference.

40. The medium of claim 39, wherein the component comprises at least one of a system, a sub-system, a portion of a system, and a portion of a sub-system disposed within the graphical model.

41. The medium of claim 39, wherein the graphical model comprises a plurality of components.

42. The medium of claim 39, wherein identifying the component comprises heuristically locating a re-usable pattern and selecting the component to represent the re-usable pattern.

5   43. The medium of claim 39, wherein identifying the component comprises utilizing a checksum to identify selected patterns and selecting the component that matches the selected patterns.

44. The medium of claim 39, wherein identifying the component comprises
10   heuristically locating a specific type of component and selecting the component that matches the specific type.

45. The medium of claim 39, wherein identifying the component comprises locating a selected acyclic graph of blocks and selecting the component that contains the selected
15   acyclic graph of blocks.

46. The medium of claim 39, wherein identifying the component comprises utilizing a partitioning specific checksum to select a predetermined combination of selected patterns and selected re-usable features of components for identification.
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47. The medium of claim 39, wherein identifying the component comprises soliciting user interaction to participate in a selection of components based on at least one of pattern matching, re-usability, and polymorphism characteristics.

25   48. The medium of claim 39, wherein automatically converting the component into a reference comprises creating a new model and copying the component into the new model.

49. The medium of claim 48, further comprising setting compiled properties to be fixed
30   into input and output ports.

50. The medium of claim 46, wherein automatically converting the component into a reference further comprises copying a configuration set from the component into the new model.

5   51. The medium of claim 50, wherein the configuration set comprises model peripheral information.

52. The medium of claim 48, further comprising replacing the other components with references to the new model.

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53. The medium of claim 39, wherein automatically converting the component into a reference comprises collapsing the component into a subsystem within the graphical model.

15   54. The medium of claim 53, wherein automatically converting the component into a reference further comprises copying the subsystem into a library, forming a library subsystem and leaving an original version of the subsystem within the graphical model.

55. The medium of claim 54, wherein automatically converting the component into a
20   reference further comprises replacing the original version of the subsystem with a reference to the library subsystem.

56. The medium of claim 55, further comprising replacing the other components with references to the library subsystem.

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57. The medium of claim 39, wherein the reference comprises at least one of a library reference and a model reference.

58. In an electronic device, a method of simplifying a model, comprising:
30   providing a plurality of components forming the model;
            identifying repeating occurrences of a pattern among the plurality of
components;

creating a new model based on the pattern;

replacing each of the repeating occurrences of the pattern with a reference to the new model.

5   59. The method of claim 58, wherein each of the plurality of components comprises at least one of a system, a sub-system, a portion of a system, and a portion of a sub-system disposed within the graphical model.

60. The method of claim 58, wherein identifying repeating occurrences of the pattern
10   comprises heuristically locating a re-usable pattern amongst the plurality of components and selecting one of the plurality of components to represent the re-usable pattern.

61. The method of claim 58, wherein identifying the repeating occurrences of the pattern comprises utilizing a checksum to identify selected patterns amongst the plurality
15   of components and selecting individual of the plurality of components that match the selected patterns.

62. The method of claim 58, wherein identifying the repeating occurrences of the pattern comprises heuristically locating a specific type of component amongst the
20   plurality of components and selecting one of the plurality of components that matches the specific type.

63. The method of claim 58, wherein identifying the repeating occurrences of the pattern comprises locating a selected acyclic graph of blocks amongst the plurality of
25   components and selecting one of the plurality of components that contains the selected acyclic graph of blocks.

64. The method of claim 58, wherein identifying the repeating occurrences of the pattern comprises utilizing a partitioning specific checksum to select a predetermined
30   combination of selected patterns and selected re-usable features of components amongst the plurality of components for identification.

65. The method of claim 58, wherein identifying the repeating occurrences of the pattern comprises soliciting user interaction to participate in a selection of components based on at least one of pattern matching, re-usability, and polymorphism characteristics.

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66. The method of claim 58, wherein the reference comprises at least one of a library reference and a model reference.